

Abstract of the Disclosure

5 In a transaction system, an Extensible Markup Language (XML) algebra is provided for micro-managing time-based data entities describing reservable services, engaged reservables, and service requests. Each of the described entities serves as components manipulated through execution of the algebraic set of functions, which when executed, perform various
10 automated services including determining states of being with regard to engaged services, available resources, and satisfaction of service requests. In a preferred embodiment, the entities are represented in the transaction database as XML expressions and the algebraic functions are XML-related functions. In some embodiments, other SGML-based languages may be
15 used in place of XML. In all embodiments, the various computational results achieved by algebraic manipulation of certain types of the data entities are expressed as new data entities indicating desired states and conditions existent in the database as a whole.